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Bedrock Geology of the Slate Run Quadrangle, Clinton, Lycoming, and Potter Counties, Pennsylvania

George W. Colton and Stanley J. Luft

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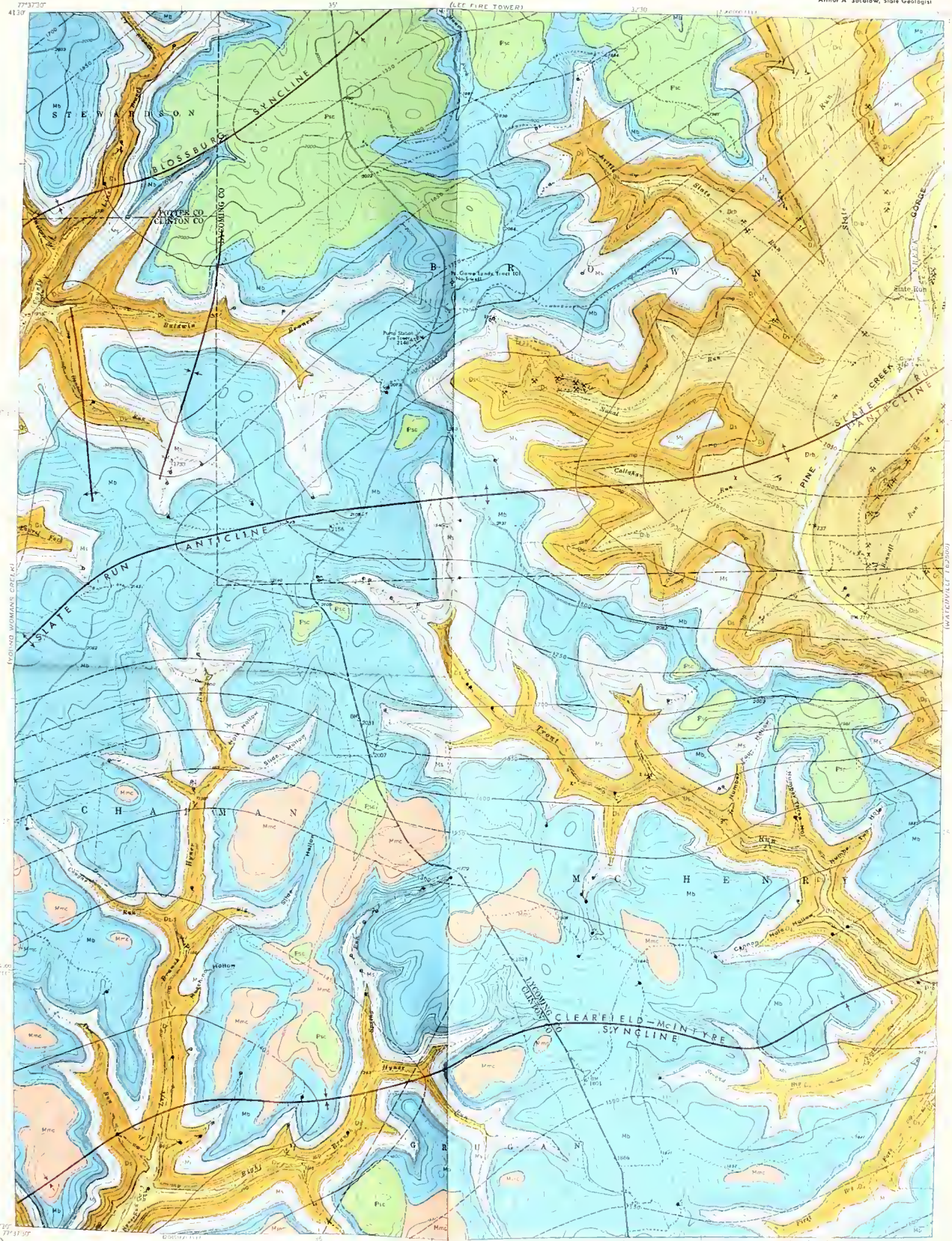

Base from U.S. Geological Survey, 7.5' series topographic map of the Slate Run quadrangle, Pennsylvania, 1946.

Geology by G. W. Cotton, 1961-1964
S. J. Lyft, 1964, revised by T. J. M. Schopf, 1961; B. V. Hanson, 1952; Field Peisl, 1963

GEOLOGIC MAP OF THE SLATE RUN QUADRANGLE, PENNSYLVANIA

Prepared by
The United States Geological Survey
In cooperation with
The Pennsylvania Geological Survey

CONTOUR INTERVAL 20 FEET

Progress Report 167

Bedrock Geology of the Slate Run Quadrangle, Clinton, Lycoming, and Potter Counties, Pennsylvania[1]

by

George W. Colton and Stanley J. Luft

U.S. Geological Survey
Baltimore, Md., Washington, D.C.

This preliminary geologic report of the Slate Run 7½-minute quadrangle is part of a stratigraphic and structural study of the Pulaski sequence in part of north-central Pennsylvania. The work is being done in cooperation with the Pennsylvania Topographic and Geologic Survey. The ultimate study area is broad enough to include parts of the Appalachian Plateau province, and across the Allegheny topographic front into the Valley and Ridge province.

The area of the Slate Run quadrangle has been completely covered on planimeter geologic maps of the Second Geological Survey of Pennsylvania (Conner, 1880, Sherwood and Platt, 1880, and Sherwood, 1880). Most recently a planimetric map accompanying a report by the present Pennsylvania Topographic and Geologic Survey (Ehrlich, 1952) covered the southern one-third of the quadrangle.

Industrial stratigraphic names are used in this report for most rock units because the writers feel that additional work will result in a better understanding of stratigraphic relation and a revision of the nomenclature used by earlier workers. The nomenclature used here is compared in the chart below with that of Ehrlich (1952) in central Clinton County and Colton (1963) in the adjacent Cedar Run quadrangle.

Flagstone is the only product obtained in quantity from the bedrock in the Slate Run quadrangle. Most flagstone quarries shown on the accompanying geologic map have been abandoned, but a few in the vicinity of Slate Run are worked sporadically. The largest quarries are located in the middle part of the lower sandstone sequence (here in no maps accompanying this report. However, quarries for gray, red, and brown flagging have been operated in the red-bed sequence. In general, the rock most suitable for the production of commercial-grade flagstone occurs in the upper part of thick gray sandstone units that are characterized by predominantly red sandstone, siltstone, shale, or sandstone beds.

No commercially unsuccessful deep well has been drilled for oil or gas in the Slate Run quadrangle. The locally financed Grant Tomb No. 1 well was drilled in 1953 on the crest of the Slate Run anticline along the west bank of Pine Creek, at the mouth of Little Slate Run. Scant data from Fettke (1956, p. 98), Carr (1962), and local reports suggest that the potential gas-bearing unit, the Lower Devonian "Oriskany sand" of the drillers, was not penetrated, but probably occurs approximately 6,400 feet below the outlier. Localization of the following three factors indicates that the well penetrated two faults: the elevation of the conglomerate at Cedar Run in the vicinity of the well as shown by structure-contour lines on the accompanying map, regionally determined stratigraphic intervals between the "Oriskany sand" and the conglomerate at Cedar Run; the inferred elevation of the "Oriskany" and the reported elevation of the Tully Limestone in the well. Maximum displacement is apparently about 750 feet, and, assuming that the faults are approximately parallel to the regional structural trend, relative movement was downward on the southern block, upward on the middle block in effect, and slightly downward on the northern block. The New York State Natural Gas Company's No. 1 Pennsylvania Game Lands Tract 101 (Lytle and others, 1963) was drilled in 1962 on the north bank of the Slate Run embayment, 0.4 mile northeast of Pump Station Fire Tower. Thirty-seven feet of "Oriskany sand" was encountered 2,432 feet below the outlier, 5,746 feet below sea level, or about 7,466 feet below the conglomerate at Cedar Run.

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[1]Publication authorized by the Director, U. S. Geological Survey

Comparison of stratigraphic nomenclature in the Slate Run quadrangle and in nearby areas

	Central Clinton County (adapted from Ehrlich, 1952, p. 6-9, pl. 2)		Cedar Run quadrangle, Tioga and Lycoming Counties (Colton, 1963)		Slate Run quadrangle (this report)	
Pennsylvanian	Pottsville Group	Conemaugh-age (?) Sandstone	Pennsylvanian	Sandstone and conglomerate	Pennsylvanian	Sandstone and conglomerate
Mississippian	Pocono Group	Mauch Chunk Group				Mauch Chunk Formation
		Bergson (?) Sandstone	Mississippian	Sandstone and conglomerate	Mississippian	Bergson (?) Sandstone at and by Ehrlich
		Patton Red Shale		Upper sandstone sequence		Upper sandstone sequence (includes Patton Red Shale as used by Ehrlich at top)
		Unnamed conglomerate		Conglomerate at Cedar Run		Conglomerate at Cedar Run
Devonian		Mount Pleasant (?) Red Shale	Devonian	Lower sandstone sequence	Devonian	Lower sandstone sequence (includes Mount Pleasant (?) Red Shale as used by Ehrlich near middle)
		Oswayo Formation				
		Catskill Facies or Red Beds		Red-bed sequence		Red-bed sequence

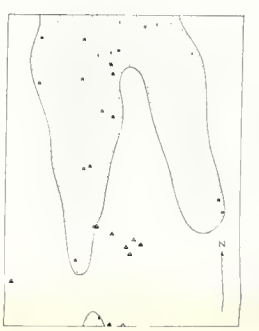

Figure 1.—Outline map of the Slate Run quadrangle showing localities where the Mauch Chunk formation is known to consist of red beds (solid triangles), localities where strata of Pennsylvanian age are known to be probably (solid circle), and probably original extent of pebble-bearing rocks of Pennsylvanian age (stippling)

Figure 2.—Outline map of the Slate Run quadrangle showing areas where conglomerate at Cedar Run is absent (diagonal lines), area where Burgoon (?) Sandstone as used by Ehrlich (1952) is probably (light stippling), and areas where Burgoon (?) Sandstone as used by Ehrlich consists pebbles more than one-half inch in maximum diameter (dense stippling)

EXPLANATION

Contact
Dashed where approximately located.

Contact
Drawn on base of Mount Pleasant (?) Red Shale as used by Ehrlich (1952). Dashed where approximately located.

1500
1600
Structure Contours
Drawn on top of conglomerate at Cedar Run. Dashed where control less accurate or where datum is above land surface. Contour interval 50 feet. Datum is mean sea level.

Anticline, showing crestline

Synocline, showing troughline

Strike and dip of beds

Flagstone quarry

Prospect pit

Abandoned gas well

Spring

NOTE: Stratigraphic symbols and units are shown in columnar section. Red beds shown by diagonal lines.